Figure 1

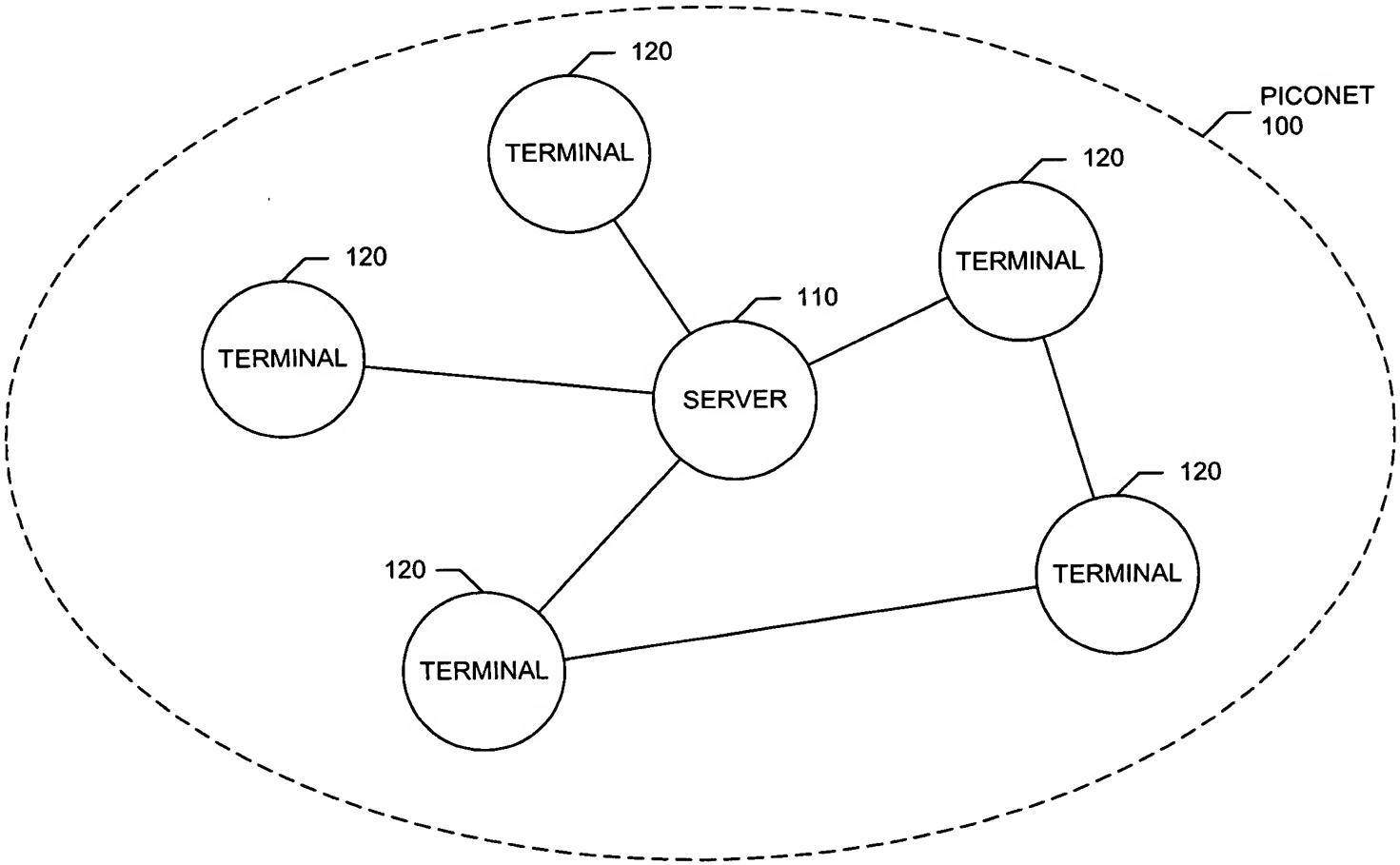

PICONET
100
120
TERMINAL
120
TERMINAL
120
TERMINAL
110
SERVER
120
TERMINAL
120
TERMINAL

Figure 2A

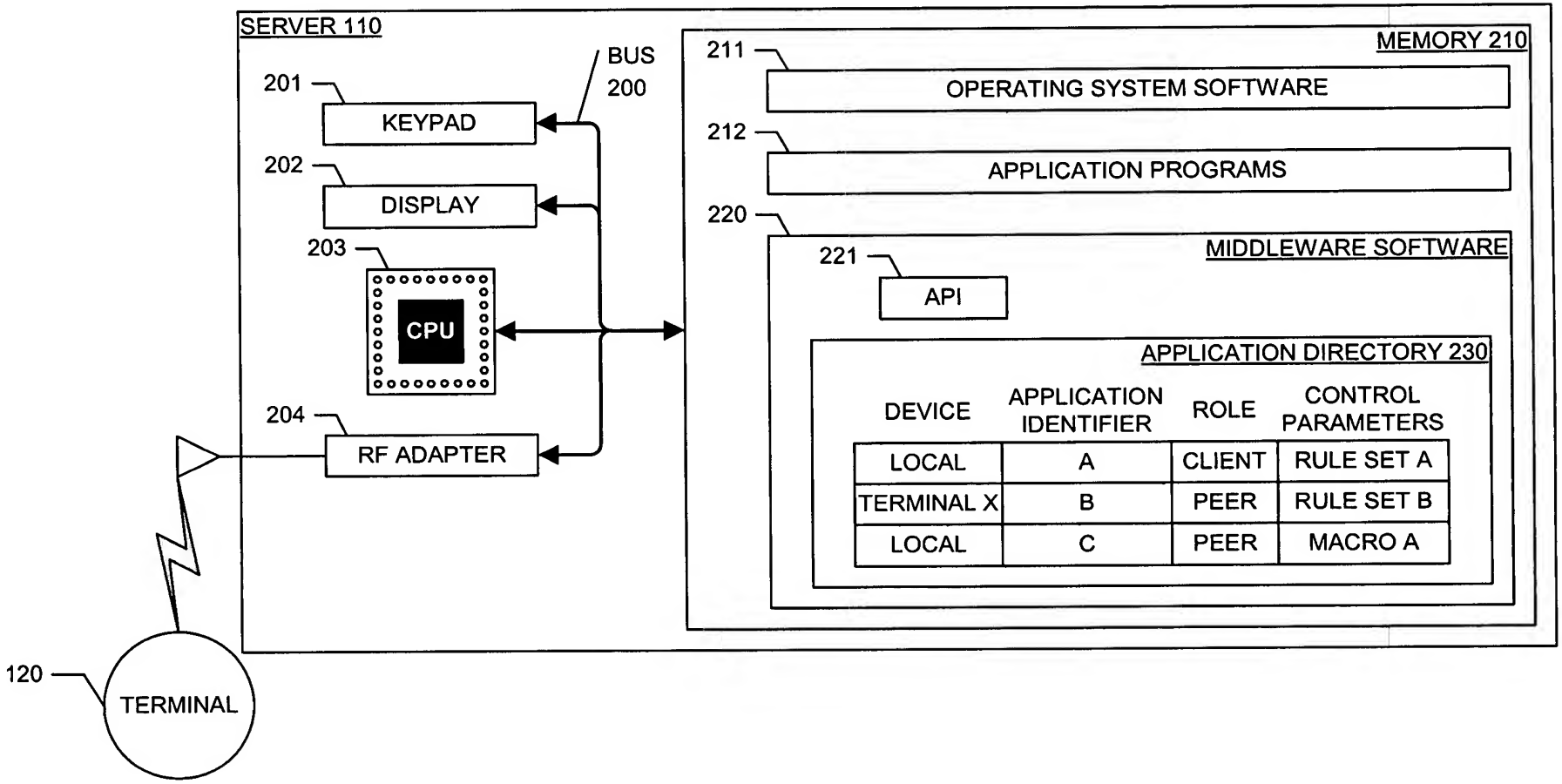

SERVER 110
BUS
200
201
KEYPAD
202
DISPLAY
203
CPU
204
RF ADAPTER
MEMORY 210
211
OPERATING SYSTEM SOFTWARE
212
APPLICATION PROGRAMS
220
MIDDLEWARE SOFTWARE
221
API
APPLICATION DIRECTORY 230
DEVICE
APPLICATION IDENTIFIER
ROLE
CONTROL PARAMETERS
LOCAL
A
CLIENT
RULE SET A
TERMINAL X
B
PEER
RULE SET B
LOCAL
C
PEER
MACRO A
120
TERMINAL

Figure 2B

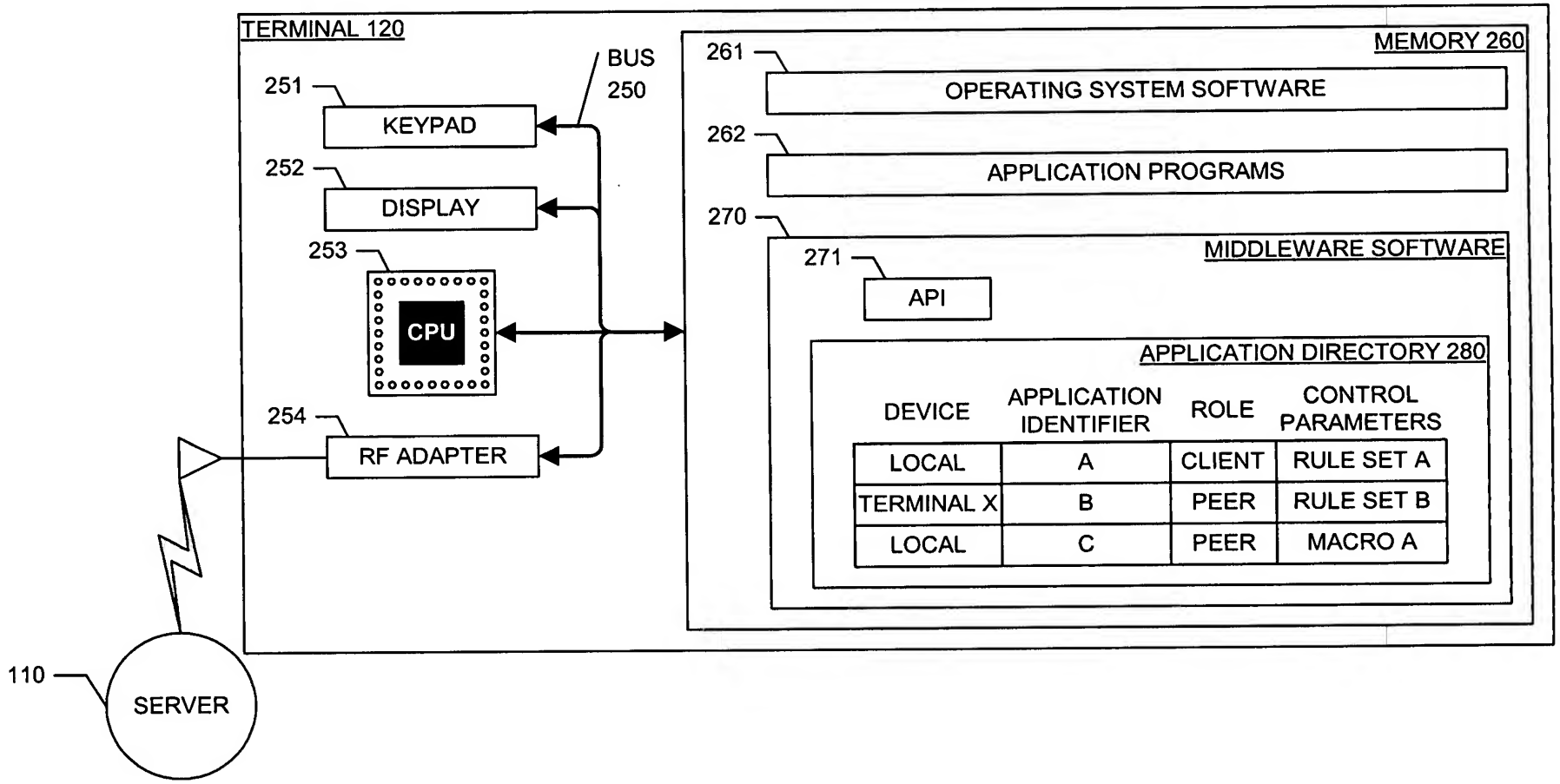

TERMINAL 120
BUS
250
251
KEYPAD
252
DISPLAY
253
CPU
254
RF ADAPTER
110
SERVER
MEMORY 260
261
OPERATING SYSTEM SOFTWARE
262
APPLICATION PROGRAMS
270
MIDDLEWARE SOFTWARE
271
API
APPLICATION DIRECTORY 280
DEVICE
APPLICATION IDENTIFIER
ROLE
CONTROL PARAMETERS
LOCAL
A
CLIENT
RULE SET A
TERMINAL X
B
PEER
RULE SET B
LOCAL
C
PEER
MACRO A

Figure 3A

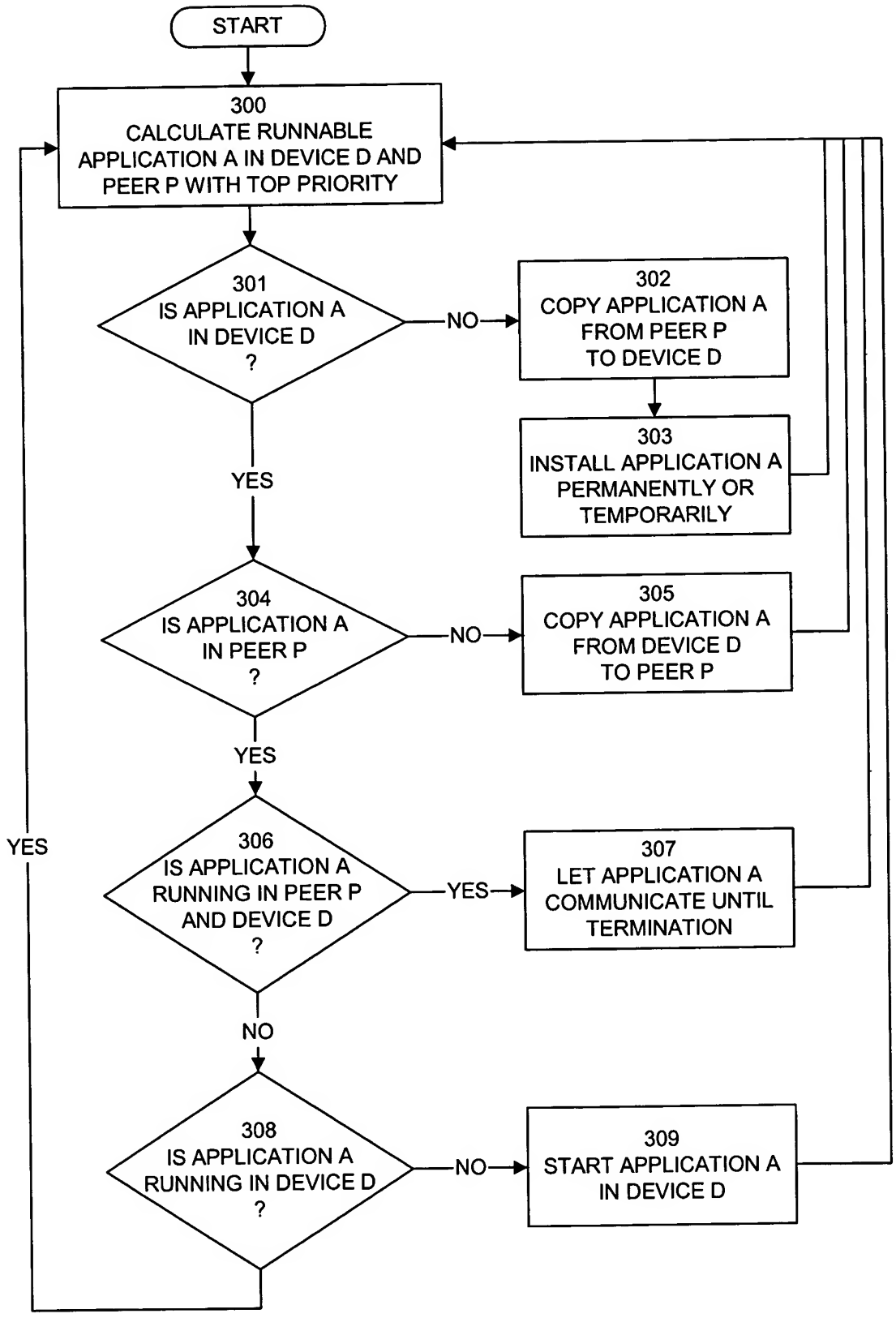

START
300
CALCULATE RUNNABLE APPLICATION A IN DEVICE D AND PEER P WITH TOP PRIORITY
301
IS APPLICATION A IN DEVICE D ?
NO
302
COPY APPLICATION A FROM PEER P TO DEVICE D
303
INSTALL APPLICATION A PERMANENTLY OR TEMPORARILY
YES
304
IS APPLICATION A IN PEER P ?
NO
305
COPY APPLICATION A FROM DEVICE D TO PEER P
YES
306
IS APPLICATION A RUNNING IN PEER P AND DEVICE D ?
YES
307
LET APPLICATION A COMMUNICATE UNTIL TERMINATION
NO
308
IS APPLICATION A RUNNING IN DEVICE D ?
NO
309
START APPLICATION A IN DEVICE D
YES

Figure 3B

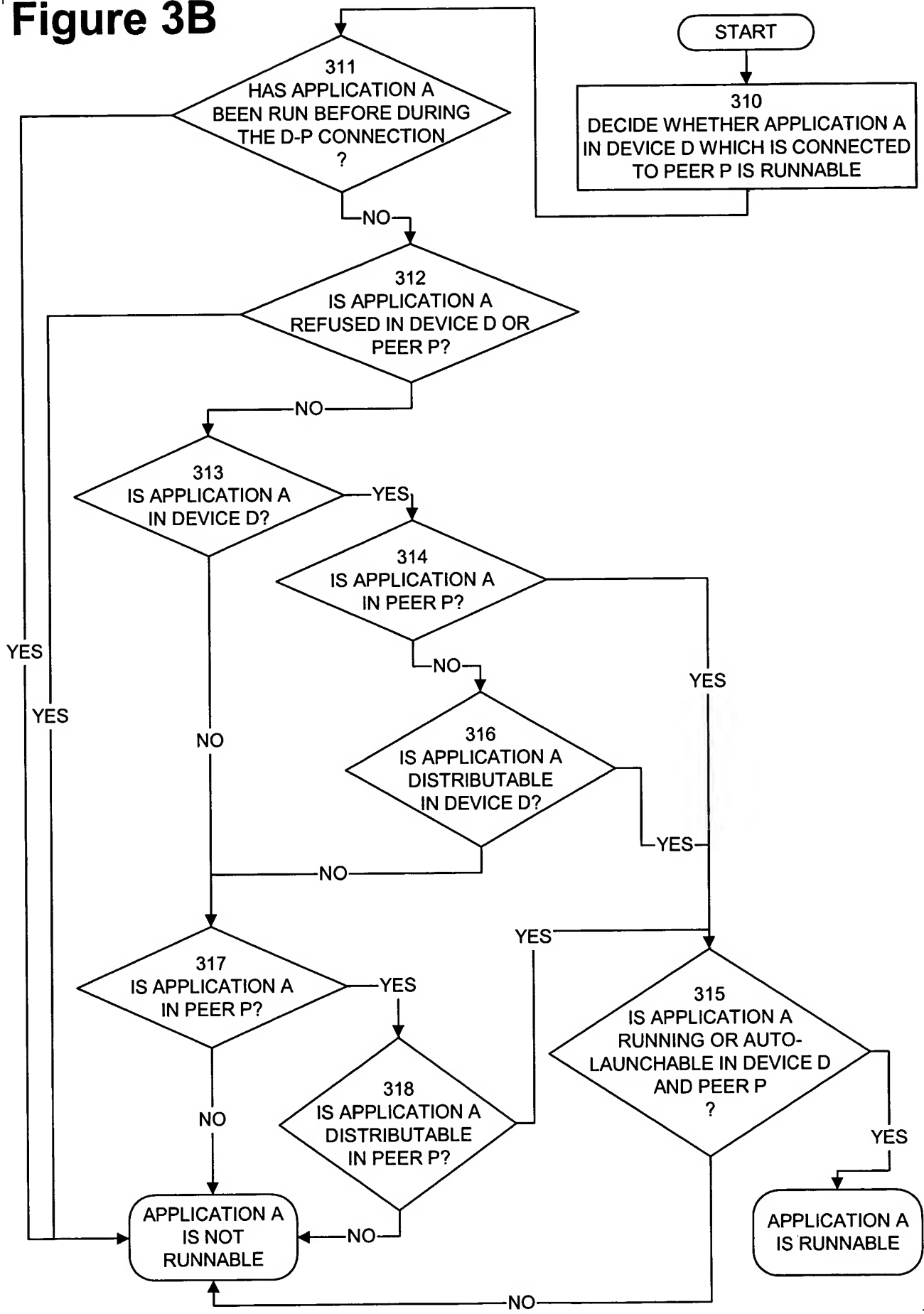

START
310
DECIDE WHETHER APPLICATION A IN DEVICE D WHICH IS CONNECTED TO PEER P IS RUNNABLE
311
HAS APPLICATION A BEEN RUN BEFORE DURING THE D-P CONNECTION ?
NO
312
IS APPLICATION A REFUSED IN DEVICE D OR PEER P?
NO
313
IS APPLICATION A IN DEVICE D?
YES
314
IS APPLICATION A IN PEER P?
NO
316
IS APPLICATION A DISTRIBUTABLE IN DEVICE D?
YES
NO
YES
YES
YES
NO
317
IS APPLICATION A IN PEER P?
YES
318
IS APPLICATION A DISTRIBUTABLE IN PEER P?
NO
315
IS APPLICATION A RUNNING OR AUTO-LAUNCHABLE IN DEVICE D AND PEER P ?
YES
APPLICATION A IS NOT RUNNABLE
NO
APPLICATION A IS RUNNABLE
NO

Figure 4A

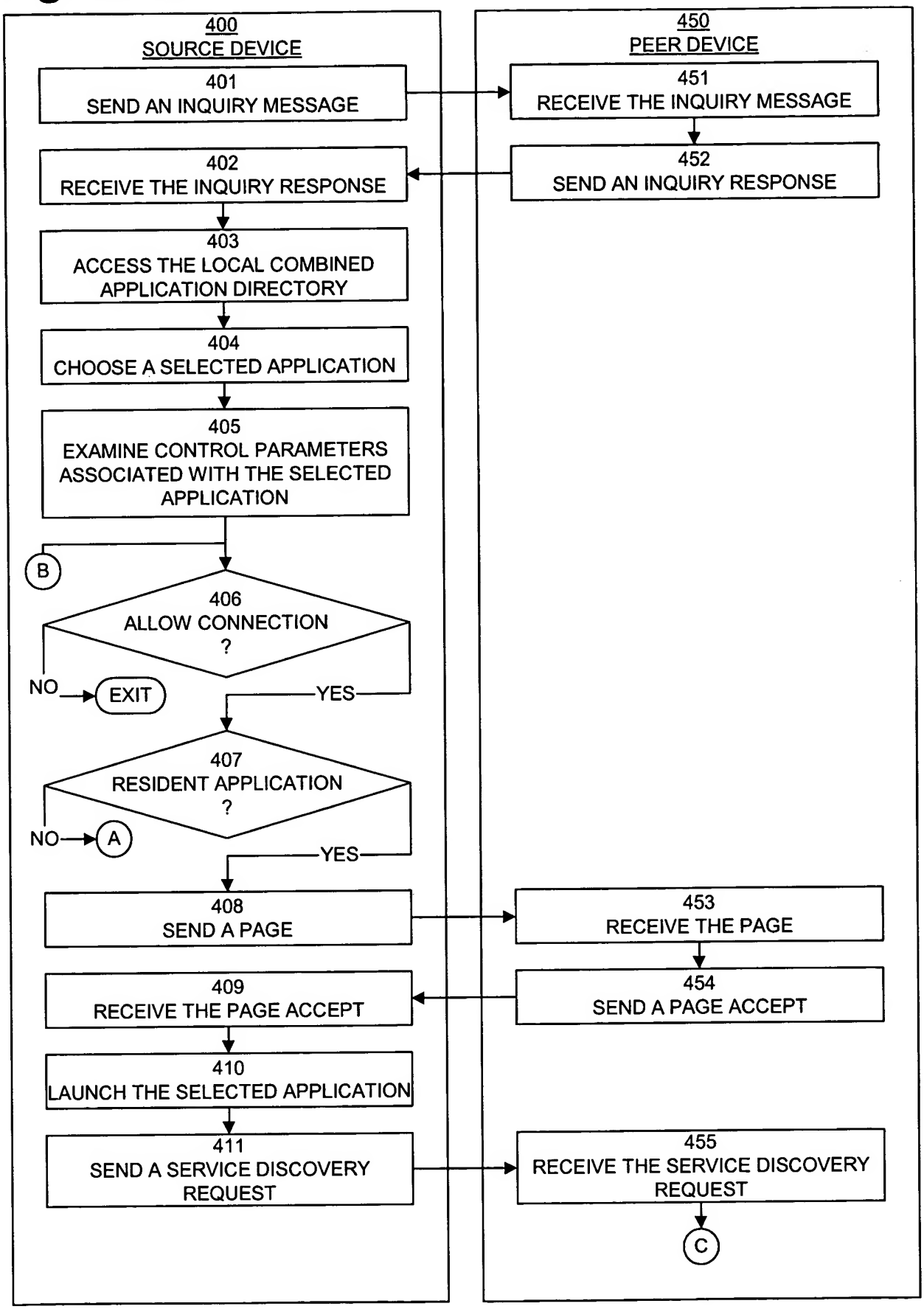

400
SOURCE DEVICE
401
SEND AN INQUIRY MESSAGE
402
RECEIVE THE INQUIRY RESPONSE
403
ACCESS THE LOCAL COMBINED APPLICATION DIRECTORY
404
CHOOSE A SELECTED APPLICATION
405
EXAMINE CONTROL PARAMETERS ASSOCIATED WITH THE SELECTED APPLICATION
B
406
ALLOW CONNECTION ?
NO
EXIT
YES
407
RESIDENT APPLICATION ?
NO
A
YES
408
SEND A PAGE
409
RECEIVE THE PAGE ACCEPT
410
LAUNCH THE SELECTED APPLICATION
411
SEND A SERVICE DISCOVERY REQUEST
450
PEER DEVICE
451
RECEIVE THE INQUIRY MESSAGE
452
SEND AN INQUIRY RESPONSE
453
RECEIVE THE PAGE
454
SEND A PAGE ACCEPT
455
RECEIVE THE SERVICE DISCOVERY REQUEST
C

Figure 4B

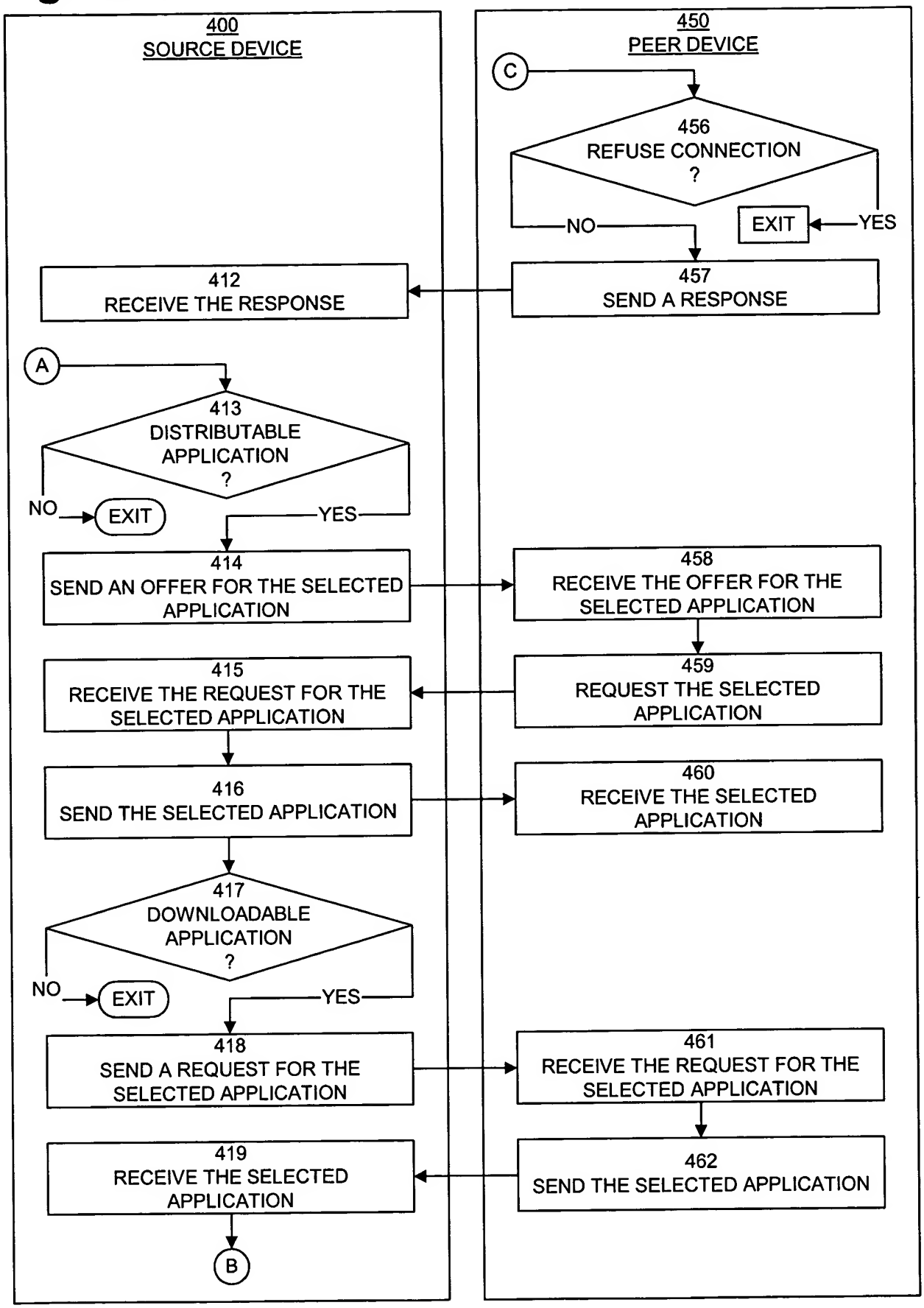

400
SOURCE DEVICE
450
PEER DEVICE
C
456
REFUSE CONNECTION
?
NO
EXIT
YES
457
SEND A RESPONSE
412
RECEIVE THE RESPONSE
A
413
DISTRIBUTABLE
APPLICATION
?
NO
EXIT
YES
414
SEND AN OFFER FOR THE SELECTED
APPLICATION
458
RECEIVE THE OFFER FOR THE
SELECTED APPLICATION
459
REQUEST THE SELECTED
APPLICATION
415
RECEIVE THE REQUEST FOR THE
SELECTED APPLICATION
460
RECEIVE THE SELECTED
APPLICATION
416
SEND THE SELECTED APPLICATION
417
DOWNLOADABLE
APPLICATION
?
NO
EXIT
YES
461
RECEIVE THE REQUEST FOR THE
SELECTED APPLICATION
418
SEND A REQUEST FOR THE
SELECTED APPLICATION
462
SEND THE SELECTED APPLICATION
419
RECEIVE THE SELECTED
APPLICATION
B

Figure 4C

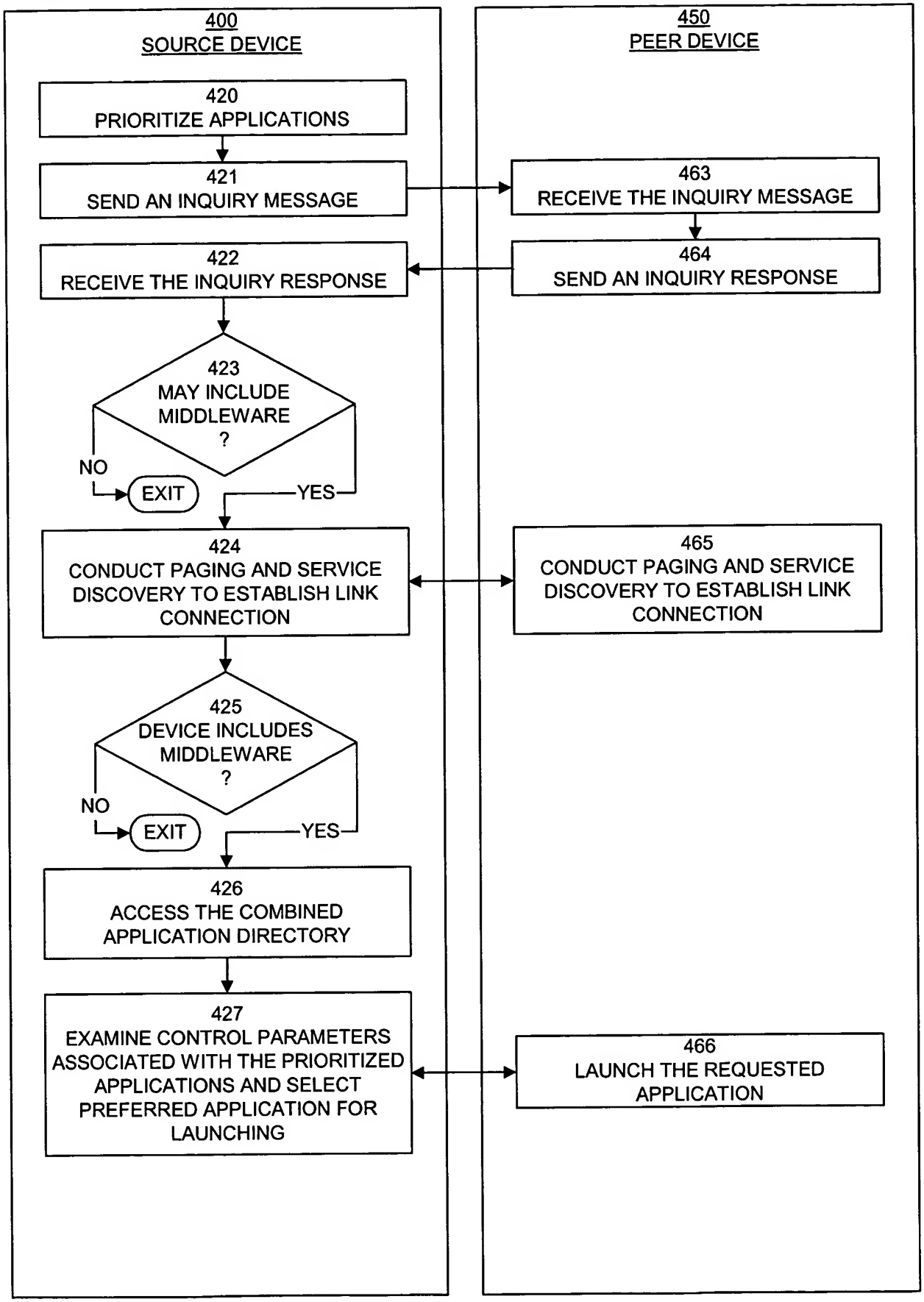

400
SOURCE DEVICE
450
PEER DEVICE
420
PRIORITIZE APPLICATIONS
421
SEND AN INQUIRY MESSAGE
463
RECEIVE THE INQUIRY MESSAGE
422
RECEIVE THE INQUIRY RESPONSE
464
SEND AN INQUIRY RESPONSE
423
MAY INCLUDE MIDDLEWARE ?
NO
EXIT
YES
424
CONDUCT PAGING AND SERVICE DISCOVERY TO ESTABLISH LINK CONNECTION
465
CONDUCT PAGING AND SERVICE DISCOVERY TO ESTABLISH LINK CONNECTION
425
DEVICE INCLUDES MIDDLEWARE ?
NO
EXIT
YES
426
ACCESS THE COMBINED APPLICATION DIRECTORY
427
EXAMINE CONTROL PARAMETERS ASSOCIATED WITH THE PRIORITIZED APPLICATIONS AND SELECT PREFERRED APPLICATION FOR LAUNCHING
466
LAUNCH THE REQUESTED APPLICATION

Figure 4D

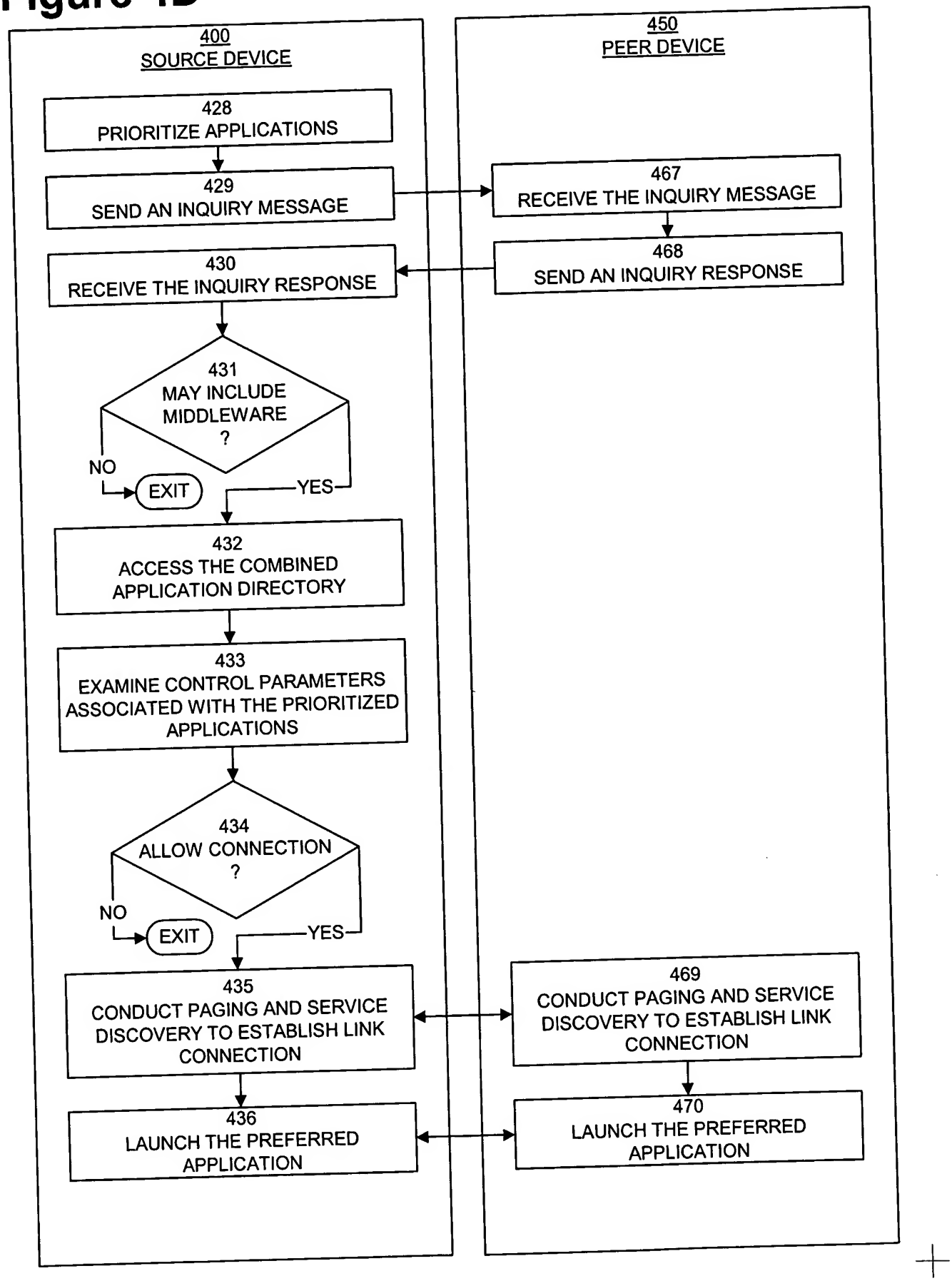
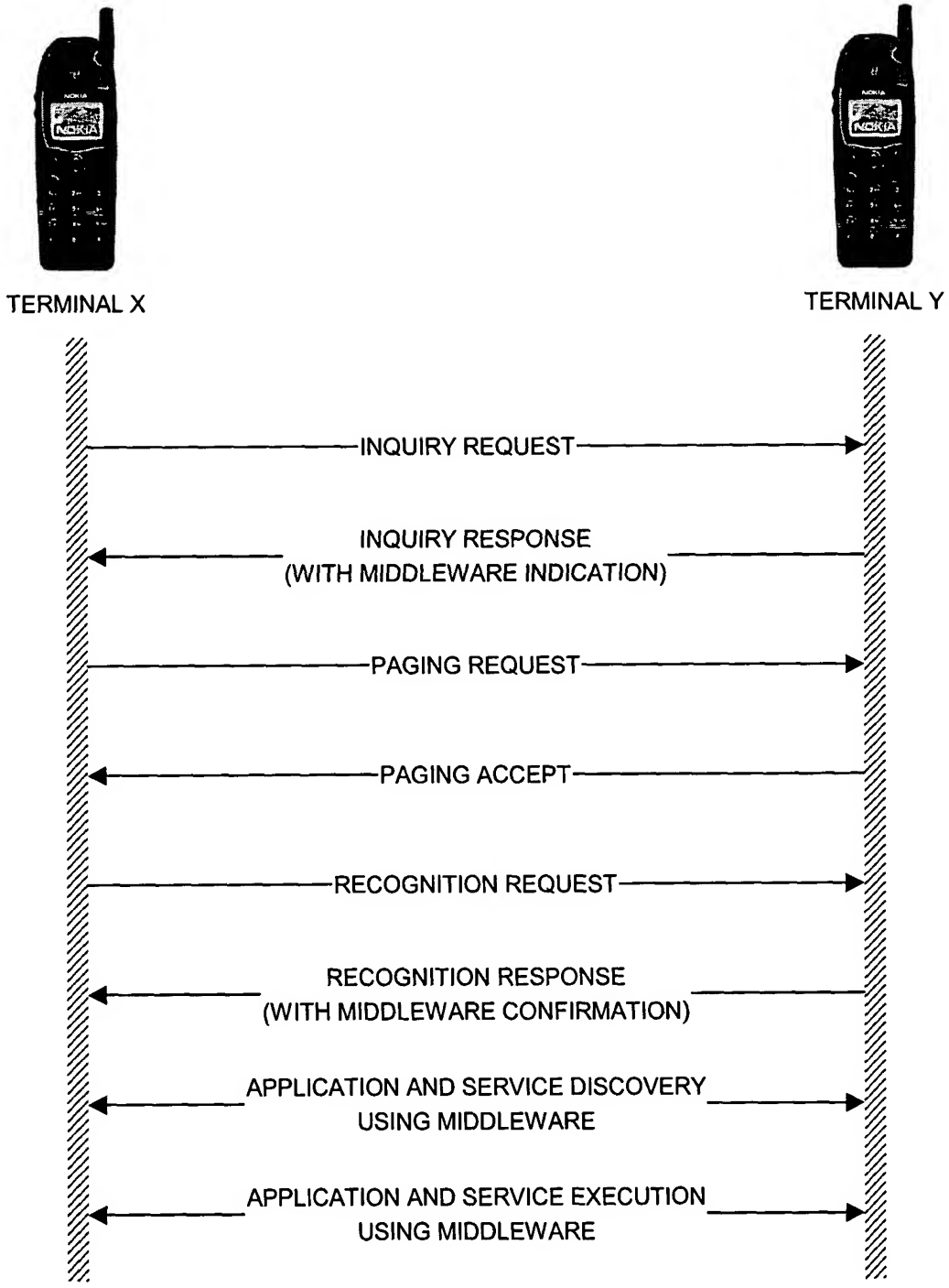

400
SOURCE DEVICE
450
PEER DEVICE
428
PRIORITIZE APPLICATIONS
429
SEND AN INQUIRY MESSAGE
467
RECEIVE THE INQUIRY MESSAGE
468
SEND AN INQUIRY RESPONSE
430
RECEIVE THE INQUIRY RESPONSE
431
MAY INCLUDE MIDDLEWARE ?
NO
EXIT
YES
432
ACCESS THE COMBINED APPLICATION DIRECTORY
433
EXAMINE CONTROL PARAMETERS ASSOCIATED WITH THE PRIORITIZED APPLICATIONS
434
ALLOW CONNECTION ?
NO
EXIT
YES
435
CONDUCT PAGING AND SERVICE DISCOVERY TO ESTABLISH LINK CONNECTION
469
CONDUCT PAGING AND SERVICE DISCOVERY TO ESTABLISH LINK CONNECTION
436
LAUNCH THE PREFERRED APPLICATION
470
LAUNCH THE PREFERRED APPLICATION

Figure 5


TERMINAL X
TERMINAL Y
INQUIRY REQUEST
INQUIRY RESPONSE
(WITH MIDDLEWARE INDICATION)
PAGING REQUEST
PAGING ACCEPT
RECOGNITION REQUEST
RECOGNITION RESPONSE
(WITH MIDDLEWARE CONFIRMATION)
APPLICATION AND SERVICE DISCOVERY
USING MIDDLEWARE
APPLICATION AND SERVICE EXECUTION
USING MIDDLEWARE